

**SELECTION OF CONTRACTOR
FOR RFP NNG08193033R
GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITES (GOES)
R SERIES OF SPACECRAFT
IMPLEMENTATION PHASE**

RE-EVALUATION OF BOEING AND LOCKHEED MARTIN PROPOSALS

On April 22, 2009, I, along with senior officials from the Goddard Space Flight Center (GSFC) and the National Oceanic and Atmospheric Administration (NOAA), met with members of the Source Evaluation Board (SEB) to hear their findings based on the re-evaluation of proposals for the Implementation Phase of the R Series of Spacecraft for the Geostationary Operational Environmental Satellites (GOES).

PROCUREMENT DESCRIPTION

This competitive procurement is for the acquisition of the Implementation Phase of the R/S/T/U Series of Spacecraft for GOES. The GOES are weather satellites built for the National Oceanic and Atmospheric Administration (NOAA) for use by the National Weather Service and other users. Congress has directed NOAA to provide weather and environmental data for the benefit of the United States and environs. To help fulfill this responsibility, NOAA has delegated the procurement of GOES spacecraft to NASA.

The GOES R series of spacecraft will carry multiple earth-observing, solar-observing and space-observing instruments. The GOES are based on a three-axis, body-stabilized design that enables the sensors to continuously view the U.S. and environs. The first satellite is scheduled to launch in 2015.

This procurement is for the Implementation Phase for the design, development, integration, test, delivery, and pre-launch, launch, and post-launch support of the GOES R series of spacecraft and will result in the award of a single Cost-Plus-Award-Fee contract. The basic contract will require delivery of two spacecraft (GOES R, GOES S). There are two options that each provide for one additional spacecraft. Option 1 is for a third spacecraft (GOES T); Option 2 is for a fourth spacecraft (GOES U).

RE-EVALUATION PROCEDURES

The re-evaluation procedures were consistent with the procedures established in the Request for Proposal (RFP).

The RFP defined the evaluation factors as Mission Suitability, Cost/Price and Past Performance. The RFP specified the relative order of importance of the evaluation factors as follows:

“The Cost Factor is significantly less important than the combined importance of the Mission Suitability Factor and the Past Performance Factor. As individual factors, the

Mission Suitability Factor is more important than the Cost Factor and the Cost Factor is approximately equal to the Past Performance Factor.”

The Mission Suitability factor evaluation was conducted in accordance with NASA FAR Supplement (NFS) 1815.304-70(b). One of the following adjectival ratings was assigned: Excellent, Very Good, Good, Fair, or Poor. After the SEB assigned the adjectival rating the SEB then determined the corresponding numerical score. Per the RFP, Mission Suitability was the only evaluation factor that was point scored in the evaluation process. The Mission Suitability factor consisted of the following four subfactors with assigned points as indicated:

Subfactors	Points Allowed
Subfactor A: Management and Mission Assurance Approach	350
Subfactor B: Systems Engineering, Design and Verification	550
Subfactor C: Small Disadvantaged Business Participation Program	50
Subfactor D: Safety and Health Plan	50
Total	1,000

Prior to the issuance of the RFP, detailed evaluation criteria were developed along with the numerical scoring system for Mission Suitability as delineated above. In explaining the detailed evaluation procedures, the RFP described the evaluation factor and subfactors and specified the criteria to be used in the evaluation. The RFP directed the attention of offerors to NFS 1815.305, “Proposal Evaluation,” where the Mission Suitability adjectival ratings along with their corresponding percentile ranges are presented.

Regarding the Cost/Price Factor, the RFP stated that the proposed cost/price would be assessed to determine reasonableness and cost realism. The evaluation was conducted in accordance with FAR 15.305(a)(1) and NFS 1815.305(a)(1)(B) and (C). The cost realism analysis was the basis of the determination of the probable cost for each offeror to perform the effort. FAR 2.101(b) refers to the definition of “cost realism” and FAR 15.404-1(d) refers to a discussion of “cost realism analysis” and “probable cost”. Upward or downward adjustments were made to the proposed cost to determine a probable cost as a result of the assessment of cost realism.

A level of confidence in the probable cost estimate correlating with the cost for the offeror to successfully perform was also assessed by the SEB. For the re-evaluation, the SEB adhered to the following definitions for level of confidence, as set forth in the NASA Source Selection Guide:

High: Based upon its cost realism analysis, the Government has a very high level of confidence that the probable cost, which is the Government’s best estimate for the

cost of a contract resulting from this offeror's proposal, correlates very closely to the actual costs that the offeror would incur to successfully implement its proposal. (emphasis added)

Medium: Based upon its cost realism analysis, the Government has a reasonable level of confidence that the probable cost, which is the Government's best estimate for the cost of a contract resulting from this offeror's proposal, correlates very closely to the actual costs that the offeror would incur to successfully implement its proposal. (emphasis added)

Low: Based upon its cost realism analysis, the Government has at best a marginal level of confidence that the probable cost, which is the Government's best estimate for the cost of a contract resulting from this offeror's proposal, correlates very closely to the actual costs that the offeror would incur to successfully implement its proposal. (emphasis added)

The RFP also stated that the score under the Mission Suitability Factor would be reduced if the probable cost was significantly higher or lower than the proposed cost according to the following schedule:

Difference Between Proposed Cost and Probable Cost (excluding fee)	Point Adjustment
+/- 0 to 9.99%	0
+/- >10% to 14.99%	-50
+/- >15% to 19.99%	-100
+/- >20% to 29.99%	-200
+/- >30%	-300

The Past Performance evaluation was conducted in accordance with FAR 15.305(a)(2) and NFS 1815.305(a)(2). Each offeror, along with its teaming partner(s) and/or major subcontractor(s), was evaluated in the following areas of performance on relevant programs: technical, schedule, cost, management; occupational health; safety; security; mission success; and other contract requirements. In evaluating Past Performance, the SEB relied on telephone inquiries, written responses received from customers on Past Performance questionnaires, GSFC Quarterly Executive Dialogues, and the NASA Past Performance database, in addition to the narrative on relevant past/current contracts

provided by the offerors. The Past Performance factor was not point scored. One of the following adjectival ratings was assigned: Excellent, Very Good, Good, Fair, Poor or Neutral.

EVALUATION PROCESS AND CHRONOLOGY

As NASA's Source Selection Authority (SSA) for this procurement, I appointed the voting members of the SEB, which consisted of NASA and NOAA civil servants. I also appointed a team of technical and business consultants, which consisted of NASA and NOAA civil servants, to assist in the proposal evaluation. These consultants were comprised of members from appropriate technical and business disciplines and were selected based on their extensive experience in similar NASA and NOAA programs. The RFP described the evaluation factor and subfactors, provided the Mission Suitability numerical scoring system, and specified the criteria to be used in the evaluation. The RFP directed the attention of offerors to NFS 1815.305, "Proposal Evaluation," where the Mission Suitability adjectival ratings along with their corresponding percentile ranges are presented.

NASA issued the RFP on January 25, 2008.

Four amendments to the solicitation were issued prior to receipt of proposals. Amendment No. 1, dated January 25, 2008, corrected the date in the cover letter for receipt of proposals. Amendment No. 2, dated January 28, 2008, clarified the day and time for receipt of proposals and the due date for receipt of questions regarding the solicitation. Amendment No.3, dated January 31, 2008, eliminated the requirement to include the Satellite Integration and Test Plan with the proposal. Amendment No.4, dated February 11, 2008, addressed miscellaneous changes to the solicitation based on questions and comments from offerors on the solicitation. This included revision of the cost formats and corrections to document reference numbers.

Responses to vendor comments on the solicitation were published on January 31, February 4 and February 15, 2008.

Timely acceptable proposals were received on March 11, 2008 from the following companies in response to the subject procurement:

Boeing Satellite Systems
2260 East Imperial Highway
El Segundo, CA 90245

Lockheed Martin Space Systems Company
100 Campus Drive
Newtown, PA 18940

Northrop Grumman Space Technology
One Space Park
Redondo Beach, CA 90278

Operating as an integrated team, along with the use of technical and business consultants, the SEB completed its initial evaluation of the three proposals and documented its findings in a written report. Through this process, the SEB assessed the strengths and weaknesses of each proposal and agreed upon an adjectival rating for subfactor under Mission Suitability. The SEB then agreed upon a percentage rating within the range of percentages for each adjectival rating as set forth in the RFP. The SEB then applied the established numerical weights and produced a Mission Suitability score for each subfactor. In evaluating the Cost/Price Factor, the SEB assessed the cost realism of the proposed costs and determined a probable cost for each offeror. In evaluating Past Performance, the SEB relied on telephone inquiries, written responses received from customers on Past Performance questionnaires, GSFC Quarterly Executive Dialogs, and the NASA Past Performance database, in addition to the narrative on relevant past/current contracts provided by the offerors. The SEB reported its initial findings to me on June 27, 2008.

Due to the existence of weaknesses in all the proposals, the SEB recommended that discussions be held with offerors to resolve weaknesses prior to award of a contract. The SEB also determined that the RFP would have to be amended to reflect two major issues. The first issue involved expected availability of funding. After receipt of proposals, it was determined that all offerors exceeded the anticipated funding profile to some degree. Therefore, a funding profile needed to be included in the RFP. The other issue involved a change to the delivery dates for each of the spacecraft. The delivery dates for the spacecraft were established to be nine (9) months prior to the estimated launch date. That left fifteen (15) months for the spacecraft vendor to perform the instrument integration and test (I&T). Based on experience with other NASA/GSFC projects, such as GOES N, fifteen months is not an adequate amount of time to integrate and test the instruments. It was determined that the RFP needed to be amended to provide an additional six (6) months to the spacecraft delivery dates. I concurred with the Contracting Officer's (CO) determination that discussions were the appropriate course of action to resolve weaknesses and to address the changes to the RFP; and also concurred with the CO's decision to include all offerors in the competitive range.

On July 1, 2008, a letter was sent to each offeror that informed them that they were in the competitive range and that written and oral discussions would be conducted. On July 10, a letter was sent to each offeror that included the respective significant weaknesses, weaknesses and requests for clarifications on all aspects of the proposals. Offerors were asked to respond in writing by July 21, 2008. The letter also provided a schedule for oral discussions by telephone. On July 21, 2008, all offerors provided written responses as requested. On July 23, 2008, instructions for the oral discussions were provided to all offerors. Oral discussions were conducted by telephone on July 30, 2008 with Lockheed Martin Space Systems Company (Lockheed Martin); on July 31, 2008 with the Boeing Satellite Systems (Boeing); and on August 1, 2008 with Northrop Grumman Space Technologies.

On August 12, 2008, Amendment 5 was issued to each offeror to: (1) provide instructions for submission of the Final Proposal Revisions (FPRs); (2) modify the Mission

Suitability volume page count to allow for changes to the proposal; (3) modify the model contract to include Clause B.6, Funding Limitations, changes in delivery dates for all spacecraft, changes to the Option clause, clarification of simulator deliverable requirements, clarification of inspection requirements, and updates to FAR and NFS clauses; (4) modify technical requirements to provide for miscellaneous minor technical changes; (5) add the clause for Notice of Rated Order to Section L; (6) update Section L clauses; (7) modify Cost proposal instructions, including revisions to cost formats; and (8) establish the due date of September 2, 2008 for Final Proposal Revisions (FPRs). On August 20, 2008, Amendment 6 was issued to correct minor errors in the identification number for the Master Schedule and in two technical documents.

Three timely FPRs were received by the due date of September 2, 2008. The contractors were as follows:

1. Lockheed Martin Space Systems Company
2. Boeing Satellite Systems
3. Northrop Grumman Space Technologies

Using the same evaluation procedures as noted above, the SEB completed its evaluation of the proposals and documented its findings in a written report. Through this process, the SEB assessed the strengths and weaknesses of each proposal and agreed upon an adjectival rating for each subfactor under Mission Suitability. The SEB applied the established numerical weights and produced a Mission Suitability score within the adjectival rating developed for each subfactor and then calculated the total mission suitability score. On November 4, 2008, the SEB first presented its findings on the Final Proposal Revisions (FPRs). As a result of that presentation, several clarifications to findings were requested. The SEB determined that it needed to revise the findings to provide the requested clarifications. On November 17, 2008, the SEB presented its clarified findings. Based on the presentation, Lockheed Martin was selected for award. The GOES-R contract was awarded to Lockheed Martin on December 4, 2008.

PROTEST OF AWARD

On December 15, 2008, Boeing filed a protest with the General Accountability Office (GAO). By letter dated December 16, 2008, the contract to Lockheed Martin was suspended. On January 13, 2009, NASA filed its agency report. On January 23, 2009 Boeing filed a supplemental protest. On February 2, 2009, NASA responded to the supplemental protest. On February 9, 2009, Boeing submitted its second supplemental protest. On February 17, 2009, NASA filed a motion to dismiss the protests in order to take corrective action and re-evaluate, as necessary, the Lockheed Martin and Boeing proposals. On February 19, 2009, GAO formally dismissed the protest.

RE-EVALUATION

Using the same evaluation procedures as noted above, the SEB completed its re-evaluation of the Boeing and Lockheed Martin proposals and has documented its findings

in a written report. Northrop Grumman Space Technologies was not a party to the protest and therefore its proposal was not re-evaluated.

MISSION SUITABILITY

In conducting the re-evaluation, the SEB reviewed the Mission Suitability proposals in accordance with the RFP. The SEB re-assessed the strengths and weaknesses of each proposal and agreed upon an adjectival rating for each subfactor under Mission Suitability. The SEB then agreed upon a percentage rating within the range of percentages for each adjectival rating as set forth in the RFP. The SEB then applied the established numerical weights and produced a Mission Suitability score for each subfactor. Based on its re-evaluation, the SEB ranked the FPRs in the following order for Mission Suitability:

1. Lockheed Martin Space Systems Company
2. Boeing Satellite Systems

The substance of the SEB's re-evaluation of Mission Suitability is presented below.

Lockheed Martin Space Systems Company (Lockheed Martin)

The Lockheed Martin proposal received an overall adjectival rating of "Very Good," and the highest Mission Suitability score. Out of the four subfactors for Mission Suitability, the Lockheed Martin proposal received the second highest score in Subfactor A; the highest score in Subfactor B; the second highest score in Subfactor C; and tied for the highest score in Subfactor D.

Under Subfactor A, Lockheed Martin received no significant strengths, two strengths, no significant weaknesses, no weakness and no deficiencies.

Lockheed Martin received a strength as follows:

Lockheed Martin has proposed to dedicate its Assembly, Integration and Test (AIT) facilities for the System Module in Newtown, PA and for satellite integration in Denver to GOES R. These dedicated AIT facilities reduce risk during the I&T phase.

Lockheed Martin received a second strength as follows:

Lockheed Martin has proposed to locate program management and systems engineering in a Greenbelt, MD facility for preliminary design efforts. Close proximity of these functions promotes efficient and timely communications thus reduces risk during the development and I&T phases.

Under Subfactor B, Lockheed Martin received two significant strengths, thirteen strengths, no significant weaknesses, no weaknesses and no deficiencies.

Lockheed Martin received a significant strength as follows:

The proposed Lockheed Martin instrument accommodation approach greatly enhances the potential for successful instrument performance during operations and reduces instrument subsystem and satellite-level integration and testing risk. The approach comprehensively addresses earth-pointed, sun-pointed and in-situ instrument accommodations by incorporating design elements that will dynamically isolate the earth pointed instruments, facilitate integration and testing of all instruments at the subsystem and satellite level, and increase instrument shielding. The design of the Earth Pointing Platform (EPP) for the Advanced Baseline Imager (ABI) and Geostationary Lightning Mapper (GLM) provides a robust, lower risk modular design which is dynamically isolated from the bus, allows for more efficient Integration and Test at the subsystem and satellite levels, and provides a high level of confidence that the Image Navigation and Registration (INR) requirements of the nadir-pointing instruments can be met with margin. Lockheed Martin's proposed design and integration approach for the Space Environment In-Situ Suite (SEISS) reduces technical risks and facilitates efficient integration and test processes and enhances access. Lockheed Martin's accommodation approach allows unrestricted access to Extreme Ultra-Violet Sensor/X-Ray Sensor Irradiance Sensors (EXIS) and Solar Ultra-Violet Imager (SUVI), including the SUVI electronics box, whether or not the solar array and yoke are in the stowed or deployed configuration. Such access will greatly reduce schedule impacts due to last minute checks, testing or other work on the solar pointing instruments. The proposed placement of instrument electronic-boxes (or E-boxes) internal to the bus enhances instrument radiation protection and potentially provides flexibility in design between radiation protection and mass. These design elements directly benefit the primary science gathering mission of the GOES-R satellite and constitute a significant value to the Government during operations. Furthermore, these accommodations are also a risk reduction benefit to the Government during the development and integration and test (I&T) phases.

Lockheed Martin received a second significant strength as follows:

The Lockheed Martin Communication subsystem design is a low risk approach that significantly exceeds the contract requirements and appreciably enhances the potential for successful performance of the GOES-R Series. Lockheed Martin exceeds the requirements in the areas of system reliability, data telemetry downlink and noise power ratio which will benefit the Government during the operational phase. The Lockheed Martin approach provides for the capability to continuously transmit all SEISS and magnetometer data while in storage. This low risk approach also provides significant benefit to the Government during all phases of the program through risk reduction.

It is noted that, as stated in the GOES R Spacecraft Functional and Performance Specification (F&PS) (Attachment B of the RFP), the mission of the GOES R System is to acquire and disseminate environmental data from a near-equatorial Earth orbit at geostationary attitude. This includes the Earth's surface and atmosphere, solar activity, and geosynchronous space environment. The two significant strengths directly address

both the acquisition and the dissemination of environmental data. One of the significant strengths is for superior instrument accommodation to acquire the environmental data. The other significant strength is for a low risk communications system, which is directly related to the dissemination of the environmental data. Both significant strengths provide additional benefit to the Government by exceeding requirements, while greatly enhancing the probability for mission success through risk reduction and risk avoidance.

Lockheed Martin received a strength as follows:

Lockheed Martin's early testing on an Radio Frequency (RF) mockup of the spacecraft will help minimize schedule slips due to hardware re-work and/or physical antenna rearrangements due to late discovery of GOES-R self-compatibility issues. This risk reduction enhances the potential for successful contract performance during the development and I&T phases.

Lockheed Martin received a second strength as follows:

Lockheed Martin's proposed use of routine yaw flips to periodically monitor and determine the magnetometer offsets will provide more accurate magnetic field measurements, which enhances the potential for successful operations.

Lockheed Martin received a third strength as follows:

Lockheed Martin proposes a proactive approach to data base format definition across space and ground segments. This approach will save Instrument and Spacecraft vendors' time in debugging database transfers and will be less prone to errors. This risk reduction enhances the potential for successful performance during all phases of the program.

Lockheed Martin received a fourth strength as follows

Lockheed Martin has developed and tested a GPS antenna optimized for performance in geostationary orbit. This risk reduction enhances the potential for successful performance during the development and operational phases.

Lockheed Martin received a fifth strength as follows:

Lockheed Martin has specified upgrades to the Inertial Measurement Unit (IMU) and has carried out extensive testing to validate the resulting enhanced component performance. This risk reduction will benefit the Government during all phases of the program.

Lockheed Martin received a sixth strength as follows:

Lockheed Martin has a robust system for onboard orbit propagation that will be required if sufficient GPS signals are not available due to credible space weather disturbances. This risk reduction enhances the potential for successful operations.

Lockheed Martin received a seventh strength as follows:

Lockheed Martin's proposed spacecraft design is accommodated by the Atlas 531 in the Evolved Expendable Launch Vehicle (EELV)-Medium class which provides additional value to the Government through cost avoidance on the Launch Vehicle contract.

Lockheed Martin received an eighth strength as follows:

Lockheed Martin's battery architectural design approach provides graceful degradation due to cell failures and a charging system that enhances charging efficiency and contributes to long battery life. This risk reduction enhances the potential for successful operations.

Lockheed Martin received a ninth strength as follows:

Lockheed Martin's Communication and Data Handling (C&DH) and battery architectures will minimize new design effort for accommodation of an Advanced Instrument (AI) on GOES-T&U. This enhances the potential for successful performance of options of the contract if an AI were to be funded and developed.

Lockheed Martin received a tenth strength as follows:

Lockheed Martin's approach to simulators demonstrates a clear understanding of GOES simulation needs and proposes a simulation plan that exceeds the contract requirements. This approach reduces risk and will benefit the Government during all program phases.

Lockheed Martin received an eleventh strength as follows:

Lockheed Martin's proposed approach for Storage Mode includes an earth-pointed attitude that facilitates an efficient recovery to normal, science gathering operations. This risk reduction enhances the potential for successful operations.

Lockheed Martin received a twelfth strength as follows:

Lockheed Martin's approach of local sustaining engineering support enhances communications and maximizes mission operations success through risk reduction.

Lockheed Martin received a thirteenth strength as follows:

Lockheed Martin has proposed a contract enhancement that provides data from additional Li-Ion battery life testing being conducted by Lockheed Martin under internal investment as part of an A2100 fleet upgrade; Lockheed Martin shall complete this testing and shall provide access to NASA of the test results. This additional life test data will enhance the potential for successful contract performance during the development phase through risk reduction.

Under Subfactor C, Lockheed Martin received no significant strengths, one strength, no significant weaknesses, no weaknesses and no deficiencies.

Lockheed Martin received a strength as follows:

Lockheed Martin identified types of work for SDBs that indicate a strong emphasis on complex, high technology work. Lockheed Martin's three year average in subcontracting to SDBs represents very good performance. Lockheed Martin's upward trend in SDB subcontracting in NASA programs and its extensive identification of SDBs in its cost proposal provides confidence in its ability to achieve its proposed targets. The overall Lockheed Martin approach enhances the potential for successful SDB participation.

Under Subfactor D, Lockheed Martin received no significant strengths, no strengths, no significant weaknesses, no weaknesses and no deficiencies.

Boeing Satellite Systems (Boeing)

The Boeing proposal received an overall adjectival rating of "Very Good," and the second highest Mission Suitability score. Out of the four subfactors for Mission Suitability, the Boeing proposal received the highest score in Subfactor A; the second highest score in Subfactor B; the highest score in Subfactor C; and tied for the highest score in Subfactor D.

Under Subfactor A, Boeing received no significant strengths, three strengths, no significant weaknesses, no weaknesses and no deficiencies.

Boeing received a strength as follows:

Boeing has assigned leadership and technical personnel who have previous experience on GOES N/O/P. Use of personnel with GOES N/O/P training and experience maximizes transfer of relevant lessons learned, which enhances the potential for successful performance during all phases of the program through risk reduction.

Boeing received a second strength as follows:

Boeing has proposed a contract enhancement that dedicates existing facilities for integration and test to GOES R. The dedicated facilities include an Integration and Test

(I&T) facility, a Flight Clean Room and a Test Control Facility. These dedicated facilities reduce risk during the I&T phase.

Boeing received a third strength as follows:

The proposed goals in the subcontracting plan for Women-Owned small business, HUBZone small business, Veteran-Owned small business, Service Disabled Veteran-Owned small business and other small business, exceed the goals recommended in the RFP. Boeing's approach to promoting small business participation provides confidence that the higher goals can be achieved. The higher goals will enhance small business participation in accordance with contract requirements and broaden the supplier base.

Under Subfactor B, Boeing received two significant strengths, fourteen strengths, no significant weaknesses, no weaknesses and no deficiencies.

Boeing received a significant strength as follows:

The BSS system architecture optimizes operational efficiency by automating or eliminating operational impacts due to spacecraft maneuvers and yaw flip activities. The autonomous capability inherent in the BSS architecture significantly reduces operational complexity by eliminating the scheduling and uploading of maneuver schedules needed for momentum management and stationkeeping. The proposed approach does not require twice-yearly yaw flip maneuvers and has the ability to "fly through" all other maneuvers, resulting in near-continuous science data availability and avoiding up to 48 hours of ABI outage per year. These factors contribute significantly toward exceeding contract requirements in a manner that benefits science availability, while reducing operational complexity through risk reduction, during operations.

Boeing received a second significant strength as follows:

Boeing has developed an early testing program that validates several critical subsystem designs well before the actual integration of the flight spacecraft. These activities involve considerable use of engineering model hardware to verify important analytical models and to resolve system electrical integration issues at the earliest possible date. These activities add confidence that the build-up and test of the flight spacecraft will have fewer problems and the I&T schedule will not suffer breakage from unexpected delays. Together these additional activities lead to significant risk reduction for the subsystems and will result in higher confidence in the schedule. This early testing program exceeds the contract scope requirements and appreciably enhances the potential for successful contract performance through risk reduction during the development and I&T phase.

Boeing received a strength as follows:

Boeing's Electro-Magnetic Interference/Electro-Magnetic Compatibility (EMI/EMC) mitigation approach includes design practices and enhanced testing on mockups and flight units which will reduce the likelihood of EMI/EMC risks during the development phase, I&T phase and operational phase.

Boeing received a second strength as follows:

Boeing's proposed plan for the spacecraft, subsystems, and magnetometer boom magnetic cleanliness is robust and efficient and will enhance the verification of the magnetometers' ability to collect sensitive magnetic measurements on GOES R. This plan reduces risk during the development, I&T, and operational phases.

Boeing received a third strength as follows:

Boeing is taking a proactive approach in integrating the instruments databases by providing a common template. This approach will save Instrument and S/C vendors' time in debugging database transfers and will be less prone to errors. This risk reduction enhances the potential for successful performance during all program phases.

Boeing received a fourth strength as follows:

The attitude stability provided by Boeing's proposed design will reduce risk during the development phase and enhances the probability of successful performance of the SUVI instrument during the operational phase.

Boeing received a fifth strength as follows:

Boeing's proposed implementation of GPS elements enhances accurate orbit determination, which is critical to INR. This risk reduction enhances the potential for successful operations.

Boeing received a sixth strength as follows:

Boeing's commitment of a full-time member of the project's systems engineering team to be the Ground Interfaces Engineer demonstrates an appreciation for the complexity and criticality of the interface between the Space Segment and Ground Segment contractors. This reduced risk will benefit the Government during the development and I&T phases.

Boeing received a seventh strength as follows:

Boeing's proposed spacecraft design is accommodated by the Atlas 531 in the EELV-Medium class which provides additional value to the Government through cost avoidance on the Launch Vehicle contract.

Boeing received an eighth strength as follows:

Boeing's GN&C implementation with six reaction wheels gives full performance with one wheel failure, and gracefully degrades with two or even three wheel failures, which reduces risk and enhances the potential for successful operations.

Boeing received a ninth strength as follows:

Boeing's flexibility to pull any telemetry source packet is beneficial in defining and/or redefining what data will be sent to ground with limited downlink bandwidth during the storage phase. This technical enhancement will provide benefit during the operational phase.

Boeing received a tenth strength as follows:

Boeing's proposed design reduces the interference from the SAR transmitter with the GPS receive signal. This risk reduction will be a benefit during the development phase and operations.

Boeing received an eleventh strength as follows:

Boeing has proposed a contract enhancement encompassing performance of interface testing at the satellite-level with the ABI and GLM Prototype Models. Early identification of interface issues with ABI and GLM reduces schedule risk during the I&T phase because issues can be surfaced and resolved prior to integration of flight instruments.

Boeing received a twelfth strength as follows:

Boeing's satellite control system autonomously manages momentum build-up during the sun-pointed Safe Hold Mode (SHM). This approach utilizes on-board control of the solar array position and rotation rates during Safe Hold Mode to manage momentum without utilizing thrusters. This risk reduction benefits the Government during operations.

Boeing received a thirteenth strength as follows:

Boeing has proposed to exceed the contractual reliability requirement for the Spacecraft, Auxiliary Communication Services payload, and magnetometer as a contract enhancement. This will provide superior user access to GOES Rebroadcast data as well as other services during operations.

Boeing received a fourteenth strength as follows:

Boeing's C&DH architecture will minimize new design effort for accommodation of an Advanced Instrument on GOES-T&U. This enhances the potential for successful

performance of options of the contract if an Advanced Instrument were to be funded and developed.

Under Subfactor C, Boeing received no significant strengths, one strength, no significant weaknesses, no weaknesses and no deficiencies.

Boeing received one strength as follows:

Boeing proposed a high percentage of SDB participation. Boeing identified types of work for SDBs that indicate a very strong emphasis on complex, high technology work. Boeing's three year average in subcontracting to SDBs represents very good performance. Although there are some uncertainties regarding Boeing's approach and recent downward trend in subcontracting to SDBs on NASA programs, the overall Boeing approach enhances the potential for successful SDB participation.

Under Subfactor D, Boeing received no significant strengths, no strengths, no significant weaknesses, no weaknesses and no deficiencies.

COST

In conducting its re-evaluation, the SEB re-examined the proposals in relation to the Work Breakdown Structure (WBS) to determine if the proposed cost was reasonable, realistic and consistent with the offeror's proposed approach. This extensive re-analysis did not result in any changes to the probable estimate for either offeror from the November 17, 2008 report.

- In the November 17, 2008 report, minor cost adjustments were made in the FPR for the probable estimate for the Boeing proposal. These adjustments were for differences in direct and indirect rates from what the cognizant Defense Contract Audit Agency recommended and for minor errors that Boeing cited in its proposal, but did not have time to change prior to the submission of the FPR. These adjustments were not considered to be cost realism adjustments as the adjustments did not indicate a lack of understanding of the requirements and no changes to the Mission Suitability score were required.
- In the November 17, 2008 report, no adjustments to the Lockheed Martin proposal were required in the FPR. The probable cost is the same as the proposed cost.

Of the two proposals, the Boeing proposal had the highest probable cost. The Lockheed Martin probable cost was approximately 6% lower than the Boeing probable cost. This difference was revalidated during the re-evaluation.

During the re-evaluation the SEB revised the level of confidence in the probable cost estimate for Boeing from "Medium/High" to "Medium." For the re-evaluation the SEB assessed the level of confidence for the probable cost estimate for Lockheed Martin at

the FPR assessment of "Medium." During the re-evaluation, the SEB adhered to a strict reading of the definitions established in the NASA Source Selection Guide and noted that hybrid definitions are not addressed in the SEB Guide. Therefore, the hybrid confidence rating of "Medium/High" was eliminated.

In determining the new cost confidence level, the SEB reasoned that although there are many positive aspects to both offerors' cost estimating approach, the SEB cannot assign a high level of confidence to either probable cost. The definition of high cost confidence requires "a very high level of confidence... that the actual cost correlates very closely" to probable cost. Given the complexity of the design for a mission like GOES R with new and evolving instrument payloads and support extending out through 2026, at a minimum, the SEB considers "very high" confidence to be a standard that would be extremely difficult for the SEB to assert. The aggregate Government experience on the GOES program (I-M, N/O/P, and R instruments) and other NASA/GSFC programs leads to the SEB's judgment that there will be unexpected issues and risks that, in addition to the usual issues encountered in hardware development, will be difficult to resolve without some deviation from the probable cost. The SEB, on the other hand, does have a reasonable level of confidence that the actual cost will correlate very closely to the probable cost. That is, given a reasonable number of the types of issues that are encountered in developing a mission like GOES-R, the offeror has a reasonable chance to successfully perform the contract at or near the probable cost.

PAST PERFORMANCE

The SEB conducted a re-evaluation of the Boeing and Lockheed Martin past performance, including the proposals and all other data acquired through the FPR evaluation. The SEB evaluated the relevance and performance for each contract. In evaluating the data available on each contract, the SEB digested the data as it was provided, and that had a bearing on the relevance of each contract, including the size, content, complexity, and recency of each contract. Spreadsheets were used to map the analytical process of the SEB in evaluating each contract's relevance. Based on the materials that were provided by offerors, the elements that the SEB found to be the most important in deciding the relevance of each contract including (in no order of importance):

- dollar value of each contract (size)
- type of contract (cost plus fixed, award or incentive fee, or firm fixed price)(content and complexity)
- Government customer (content and complexity)
- multiple payload integration (content and complexity)
- multiple spacecraft (s/c) integration (content and complexity)
- earth observing mission

- tight pointing and targeting requirements (content and complexity)
- geosynchronous orbit (content)
- security requirements (content and complexity)
- control systems (e.g. stellar inertial control) (content and complexity)
- spacecraft lifetime (content and complexity)
- multiple Radio-Frequency (RF) communications bands (content and complexity)

The number of past contracts available from all offerors for consideration was large, and the range of relevance to GOES-R ranged considerably. Therefore, so the SEB could efficiently focus a more detailed analysis on each offeror's most relevant past contracts, the SEB determined that each offeror's "highly relevant" and "medium-high" relevant contracts would offer the most useful insight to the Government, and focused more detailed reporting on those contracts.

In evaluating Past Performance, the SEB gave each offeror an overall composite rating of "Fair". The SEB considered that the aggregate of performance of the highly relevant and medium/high relevant contracts in making its assessment. Although both offerors have positive ratings under technical performance, safety/health/security and subcontracting performance, both have poor ratings for schedule performance and cost performance. To be in the "Good" category the offeror can have issues but there is "little identifiable effect on overall performance". The schedule and cost performance issues reported do not meet this standard. To be in the "Poor" category, the Government has "extreme doubt" that the offeror can "successfully perform". To "successfully perform" the contractor must meet technical and other contract requirements, and meet schedules within the contract value. The overall performance ratings for both offerors do not give the Government extreme doubt that either offeror can successfully perform. The schedule and cost past performance ratings do indicate that both offerors will have difficulty meeting cost and schedule. Therefore, the SEB rated past performance for both offerors as "Fair" as it has substantial doubt that either offeror can successfully perform the required effort.

Overall, Lockheed Martin has a notably high degree of experience in producing spacecraft. The contracts considered most relevant to GOES R based on size, content and complexity include: two separate contracts for Global Positioning System (GPS), Mars Scout, two separate contracts for Defense Meteorological Satellite Program (DMSP), Mars Reconnaissance Orbiter (MRO), Polar Operational Environment Satellites (POES), Milstar and Space Based Infrared System (SBIRS). The overall composite Past Performance rating is based on the evaluation of performance on these nine contracts.

Overall, Lockheed Martin has fair past performance on contracts most relevant to GOES R. With two exceptions, overall technical performance was rated very good to excellent. POES technical performance is rated very good/excellent except for the "mishap"

(damaging the N' spacecraft). SBIRS technical performance was rated fair. Technical performance on Mars Scout was rated very good except for quality assurance and instrument accommodation which were rated fair. Schedule performance on SBIRS and POES was rated as poor. Schedule performance was rated good to excellent on GPS, Mars Scout, DMSP, and MRO. Cost performance was rated poor on SBIRS, MRO, and POES. Cost performance was rated good to excellent on GPS, DMSP and Milstar. Cost performance was rated fair on Mars Scout, however, the overrun was small. Overall performance in health/safety/security and subcontracting goal performance was rated excellent.

Overall, Boeing has a notably high degree of experience in producing spacecraft. The contracts considered most relevant to GOES R based on size, content and complexity include: GOES N/O/P, Spaceway, Space Based Surveillance System (SBSS), two contracts for Wideband Global Satcom (WGS), Thuraya, Global Positioning System (GPS), Ultra High Frequency (UHF) and Tracking and Data Relay Satellites (TDRS). The overall composite Past Performance rating is based on the evaluation of performance on these nine contracts.

Overall, Boeing has fair past performance on contracts similar to GOES R. On most of the contracts considered in the evaluation, overall technical performance was rated good to excellent. Excellent ratings for technical performance were given for UHF. Good ratings were given for Thuraya and GPS technical performance. Very good ratings were given for technical performance on GOES N/O/P and Spaceway. SBSS received a rating of very good/excellent for technical performance. However, the rating for subcontract management was poor and the overall contract performance was rated as fair. TDRS technical performance is currently considered poor during its first year of performance. Schedule performance was rated fair to poor on WGS, GPS, TDRS and SBSS. Schedule performance was rated fair to good by customers on N/O/P and Spaceway, although there were significant delays in deliveries on both contracts. Schedule performance on UHF was rated excellent. Most of the relevant contracts were Firm Fixed Price. On GPS and SBSS, which are cost type contracts, cost performance was rated poor. On the Fixed Price Incentive contracts for WGS and TDRS, Boeing is within the current ceiling. Overall performance in health/safety/security and subcontracting goal performance is excellent.

DECISION

In addition to the presentation materials, I carefully reviewed the SEB's detailed report of its deliberations and findings based on its re-evaluation. I reviewed the evaluation criteria which state that the Cost Factor is significantly less important than the combined importance of the Mission Suitability Factor and the Past Performance Factor. As individual factors, the Mission Suitability Factor is more important than the Cost Factor and the Cost Factor is approximately equal to the Past Performance Factor.

Within the Mission Suitability Subfactors, I note that Subfactor A is worth 350 points, Subfactor B is worth 550 points, Subfactor C is worth 50 points, and Subfactor D is

worth 50 points, for a total of 1000 points available. Of all the subfactors, Subfactor B, which is for Systems Engineering, Design and Verification, is the most heavily weighted of the subfactors.

Regarding Mission Suitability re-evaluation, the SEB gave both proposals an adjectival rating of "very good" with only a slight difference in the point scores.

Mission Suitability Findings

The Lockheed Martin proposal was the highest rated overall proposal. It had two significant strengths and sixteen strengths. The significant strengths were in instrument accommodation and communications subsystem design. These two significant strengths directly address the core mission of the GOES R series of satellites to support the acquisition and dissemination of environmental data. The significant strength for instrument accommodation is particularly compelling. Instrument accommodation is an inherent part of the GOES R requirements and Mission Suitability. Throughout Subfactor B of the RFP, there are multiple areas where the offerors are directed to address instrument accommodation, which encompasses spacecraft to instrument interfaces, resource allocations, integration and testing. Lockheed Martin's approach to accommodating the earth pointing instruments (including the key payload, ABI, and GLM), dynamically isolates them from the spacecraft, which will prevent impacts to instrument performance resulting from spacecraft jitter or other spacecraft-generated interferences. The approach promotes efficient integration and test of the earth pointing instruments and platform. Lockheed Martin has proposed an innovative approach to accommodate the SEISS instruments which provides efficient integration and test and enhances access. The accommodation of the solar pointing instruments provides unrestricted access whether the solar array and yoke are stowed or deployed. The location of electronics boxes provides access during all phases of integration and test and provides additional shielding from radiation. All in all, Lockheed Martin has presented an approach to accommodating GOES R instruments that is well thought out. The approach greatly reduces risk in integration and test flow for each satellite and greatly reduces risk to the on-orbit performance of the most critical payload, ABI, for each mission.

The second significant strength was in the communications subsystem, which significantly exceeds the contract requirements for mission life reliability; provides for the capability to continuously transmit all SEISS and magnetometer data while in storage; and relies on a well known and low risk communications architecture. The communications subsystem design significantly reduces performance risk for each of the GOES R/S/T/U missions.

The sixteen strengths addressed dedicated facilities, local systems engineering during development, early RF testing, improved magnetic field measurements, database format definition, tested GPS antenna, upgrades to IMU, on-board orbit propagation, accommodation of Atlas 531, battery architecture design, Advanced Instrument accommodation in areas of C&DH and battery design, simulators approach, storage mode

approach, local sustaining engineering, Li-Ion battery testing data and small disadvantaged program participation.

Boeing was the second highest rated proposal in the Mission Suitability Factor. It had two significant strengths and eighteen strengths. The significant strengths were in autonomous operations and early testing of several subsystems. The first significant strength is for the system architecture which optimizes operational efficiency by automating or eliminating operational impacts due to spacecraft maneuvers and yaw flip activities. Boeing's approach significantly exceeds requirements for operations for each mission.

The second significant strength was for an early testing approach that will validate key subsystems prior to flight integration. The early testing will significantly reduce risk for the first satellite, GOES R, and has the potential to significantly reduce risk for the subsequent satellites, if additional technical issues are encountered.

The eighteen strengths addressed dedicated facilities, N/O/P experienced personnel, exceeding subcontracting goals, EMI/EMC mitigation, magnetic cleanliness, common templates for instrument databases, attitude stability, GPS implementation, full-time ground interfaces engineer, Atlas 531 accommodation, GN&C graceful degradation, telemetry source packet approach, reduced interference to Search and Rescue, PTM interface testing, autonomous management of momentum in safe hold mode, contractual reliability for spacecraft, auxiliary communications and magnetometer, advanced instrument accommodation in C&DH and small disadvantaged program participation.

Mission Suitability Discriminators

In comparison to the Boeing proposal, I found that Lockheed Martin's overall Mission Suitability proposal and particularly the significant strengths and strengths from the Lockheed Martin proposal outweighed the benefits associated with the Significant Strengths and Strengths in the Boeing proposal.

Although the Boeing proposal has two significant strengths and eighteen strengths and the Lockheed Martin proposal has two significant strengths and sixteen strengths, I found that the aggregate benefit of Lockheed Martin significant strengths and strengths outweighed the aggregate benefit of the Boeing significant strengths and strengths.

Under Subfactor A, Boeing has three strengths and Lockheed Martin has two. The SEB findings indicate that this Subfactor does not present any discriminators for selection. I concur that the aggregate benefit of the strengths under Subfactor A and the individual strengths under Subfactor A present no discriminators for selection.

Under Subfactor C, each offeror has one strength. The SEB findings indicate that this Subfactor does not present any discriminators for selection. I concur that the aggregate benefit of the strengths under Subfactor C and the individual aspects of the strengths under Subfactor C present no discriminators for selection.

Under Subfactor D, neither offeror had any strengths. The SEB findings indicate that this Subfactor does not present any discriminators for selection. I concur that the Subfactor presents no discriminators for selection.

Under Subfactor B, which has the most points under Mission Suitability, Boeing has two significant strengths and fourteen strengths. Lockheed Martin has two significant strengths and thirteen strengths. Although Boeing has one more strength compared to Lockheed Martin under this Subfactor, I found that the aggregate benefit of the findings under Subfactor B for Lockheed Martin outweigh the aggregate benefit of the findings under Subfactor B for Boeing.

The most compelling finding between both proposals is the Lockheed Martin Significant Strength for instrument accommodation under Subfactor B. Instrument accommodation is critical to the mission success of GOES R. The funding agency, and our customer, NOAA, has invested significant amounts of resources developing ABI, SEISS, SUVI, EXIS and GLM. Data from the instruments will be used to predict severe weather, solar weather and space environment which impact health, safety and security of the U.S. populace, Government and industry. For GOES R, NOAA is seeking to significantly advance imaging instrument requirements over the legacy GOES imager to facilitate better weather forecasting and tracking, including severe weather events such as hurricanes. ABI is the key payload among all the instruments.

Between the two proposals, the Lockheed Martin instrument accommodation design provides the lowest risk to the performance of the ABI and the other instruments and significantly enhances the potential for successful performance. In particular, the Lockheed Martin spacecraft to instrument interface approach results in effectively isolating the ABI from the spacecraft to ensure that the ABI can perform successfully.

I find that the benefit presented by the instrument accommodation approach proposed by Lockheed Martin stands out from all other significant strengths and strengths in either proposal and is the key discriminator between the proposals.

I also consider the second significant strength for Lockheed Martin to be a discriminator. The second significant strength is in the communications subsystem, which significantly exceeds the contract requirements for mission life reliability; provides for the capability to continuously transmit all SEISS and magnetometer data while in storage; and relies on a well-known and low risk communications architecture. The communications subsystem design significantly reduces performance risk for each of the GOES R/S/T/U missions and provides more benefit to the overall mission than either of the significant strengths for Boeing.

In summary, I find that the aggregate benefit of the Instrument Accommodation significant strength, along with the significant strength for the communications subsystem and the other strengths, outweigh the aggregate benefit of the Boeing significant strengths and other strengths.

Cost

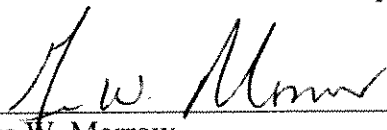
Regarding the cost evaluation, the SEB found a difference of approximately 6% between the probable cost for the Lockheed Martin proposal, which is the most highly rated in Mission Suitability and the Boeing proposal, which is the second highest rated in Mission Suitability. The difference in probable cost between Boeing and Lockheed Martin is primarily attributable to the differences in indirect rates and proposed fee. The SEB's level of confidence in the probable estimate for each proposal was assessed as medium. Although the Boeing probable estimate is rooted in N/O/P actuals, I agree with the SEB that, given the nature of the GOES R requirements, including a completely new and much more complex instrument suite, and the amount of non-recurring effort anticipated, a level of confidence of "High", as defined in the NASA Source Selection Guide, would be inappropriate. I recognize that the Lockheed Martin probable cost estimate is lower than Boeing's, and that the level of confidence in both probable estimates is "Medium", however, the difference between the probable estimates is slight. Therefore, I consider Cost to be a minor discriminator in the selection decision.

Past Performance

I noted that both offerors received a "fair" rating from the SEB for overall Past Performance. As the SEB noted, although both offerors have positive ratings in technical performance, there are poor ratings in cost and schedule performance that cast substantial doubt that either offeror will be able to successfully perform the requirement on schedule and within the negotiated cost. Therefore, as the rating for both offerors is the same, the Past Performance factor was not a discriminator in the selection decision.

Decision Conclusion

In view of the preceding discussion, I conclude that the Lockheed Martin proposal presents a better technical approach to meeting the GOES R spacecraft requirements. Consequently, I selected Lockheed Martin for the award of the Implementation Phase contract for the GOES R series of spacecraft.



George W. Morrow
Director, Flight Projects

5/5/09
Date

ACRONYM LIST

ABI	Advanced Baseline Imager
AI&T	Assembly, Integration and Test
C&DH	Communication and Data Handling
EELV	Evolved Expendable Launch Vehicle
EGSE	Electrical Ground Support Equipment
EMI/EMC	Electro-Magnetic Interference/Electro-Magnetic Compatibility
EPP	Earth Pointing Platform
EXIS	Extreme Ultra-Violet Sensor/X-Ray Sensor Irradiance Sensors
FOV	Field of View
FPR	Final Proposal Revision
F&PS	Function and Performance Specification
GLM	Geostationary Lightning Mapper
GN&C	Guidance, Navigation and Control
GPS	Global Positioning System
GSE	Ground Support Equipment
GSFC	Goddard Space Flight Center
IMU	Inertial Measurement Unit
INR	Image Navigation and Registration
I&T	Integration and Test
RF	Radio Frequency
SAR	Search and Rescue
SDB	Small Disadvantaged Business
SEB	Source Evaluation Board
SEISS	Space Environment In-Situ Suite
SSA	Source Selection Authority
SUVI	Solar Ultra-Violet Imager
WBS	Work Breakdown Structure

